

ABSTRACT OF THE DISCLOSURE

An EA-DFB module including a DFB laser diode and an EA modulator formed on an InP first-conductivity-type substrate has a mesa stripe, a current blocking structure formed on both side surfaces of the mesa strip and a second InP cladding layer formed on top of the mesa stripe and the current blocking structure. The current blocking structure includes a Fe-doped semi-insulating film, a first conductivity-type buried layer and a carrier-depleted layer. The carrier-depleted layer reduces the parasitic capacitance at the boundary between the first-conductivity-type buried layer and the second InP cladding layer.